



SEQUENCE LISTING

<110> Finkel, Terri H.
Selliah, Nithianandan
DeSimone, Dennis C.
Cron, Randall Q.

<120> Methods and Compositions for Increasing
CD4+ T Lymphocyte Immune Responsiveness

<130> 3460-CH.0210

<140> 10/673,882

<141> 2003-09-29

<150> 10/313,923

<151> 2002-12-05

<150> 09/294,949

<151> 1999-04-20

<150> 60/082,453

<151> 1998-04-20

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<170> FastSEQ for Windows Version 3.0

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<211> 9

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9

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<211> 31

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cgctggggac tttccagga ggcgtggcct g 31

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<400> 4
gactttccga ggaaggcatt tcggagaaga c 31

<210> 5
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<212> DNA
<213> Human Immunodeficiency Virus

<400> 5
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ggggactgga agggctaatt cactcccaaa gaagacaaga tatccttgat ctgtggatct 120
accacacaca aggctacttc cctgattagc agaactacac accagggcca ggggtcagat 180
atccactgac ctttggatgg tgctacaagc tagtaccagt tgagccagat aagatagaag 240
aggccaataa aggagagaac accagcttgt tacaccctgt gagcctgcat gggatggatg 300
acccggagag agaagtgtta gagtggagggt ttgacagccg cctagcattt catcacgtgg 360
cccagagagct gcatccggag tacttcaaga actgctgaca tcgagcttgc tacaagggac 420
tttccgctgg ggactttcca gggaggcgtg gcctgggagg gactggggag tggcgagccc 480
tcagatcctg catataagca gctgcttttt gcctgtactg ggtctctctg gttagaccag 540
atctgagcct gggagctctc tggctaacta gggaaccac tgcttaagcc tcaataaagc 600
ttgccttgag tgcttc 616

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<220>
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<400> 6
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<210> 7
<211> 563
<212> DNA
<213> Human T-Lymphotropic Virus-1

<400> 7
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gctaggccct gacgtgtccc cctgaagaca aatcataagc tcagacctcc gggaagccac 120
cggaaccacc catttcctcc ccatgtttgt caagccgccc tcaggcgttg acgacaaccc 180
ctcacctcaa aaaacttttc atggcacgca tatggctgaa taaactaaca ggagtctata 240
aaagcgtgga gacagttcag gagggggctc gcattctctc ttcacgcgcc cgccgccta 300
cctgaggccg ccatccacgc cggttgagtc gcgttctgcc gcctcccgcc tgtggtgctt 360
cctgaactgc gtccgccgtc taggtaagtt cagagctcag gtcgagaccg ggcctttgtc 420
cggcgctccc ttggagcctg cctagactca gccggctctc cacgctttgc ctgacctgc 480
ttgtcaact ctgcgtcttt gtttcgtttt ctgttctgcg ccgctacaga tcgaaagtgc 540
cacccttttc cctttcattc acg 563

<210> 8
<211> 360
<212> DNA
<213> Feline Immunodeficiency Virus

<400> 8
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 acgaacaaat gataaaaagga aatagctgag catgactcat agttaaagcg ctagcagctg 120
 cctaaccgca aaaccacatc ctatggaaag cttgctaatac acgtataagt tgttccattg 180
 taagagtata taaccagtgc tttgtgaaac ttcgaggagt ctctttgttg aggacttttg 240
 agttctccct tgaggctccc acagatacaa taaatatttg agattgaacc ctgtcgagta 300
 tctgtgtaat cttttttacc tgtgagggtc cggaatccgg gccgagaact tcgcagttgg 360

<210> 9
 <211> 690
 <212> DNA
 <213> Simian Immunodeficiency Virus

<400> 9
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 agtggggaat aatagatgat tggcaagctt actcaccagg cccgggggata aggtacccca 120
 gagtcttttg cttctgcttt aagctagtcc cagtggacct gcatgaggag gcacgcaact 180
 gtgagagaca ctgtctgatg catccagcac agatggggga agatcctgat ggaatagatc 240
 atggagaagt cttggtctgg aagtttgacc cgaagtgggc ggtggagtag cgcggcgaca 300
 tgtttaagga catgcacgaa catgcaaagc gctagtgtca gcactttgag gttgggactt 360
 tccgccaggg actttccaca gtgggtggat cggaggcggt acaggggagg tactgggagt 420
 ggctttcccc tcagagctgc ataaaagcag atgctcgtcg gcttgtaact cagtctctta 480
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 ggtaaggact ccttggttcc atatagctca ataaacctgc tcgcttagtc gctatatattg 600
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 tgtaccagg tgggagaac tccagcagtg 690

<210> 10
 <211> 794
 <212> PRT
 <213> Homo Sapiens

<400> 10
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 Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro Ile Glu Val Arg His
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 Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp Asp Ala Ile Asp Leu
 35 40 45
 Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln Leu Leu Glu Gly Leu
 50 55 60
 Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln Val Gly Glu Asp Gly
 65 70 75 80
 Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala Thr Gln Leu Gln Lys
 85 90 95
 Thr Tyr Asp Arg Cys Pro Leu Glu Leu Val Arg Cys Ile Arg His Ile
 100 105 110
 Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala Asn Asn Cys Ser Ser
 115 120 125
 Pro Ala Gly Ile Leu Val Asp Ala Met Ser Gln Lys His Leu Gln Ile
 130 135 140
 Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr Gln Asp Thr Glu Asn
 145 150 155 160
 Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr Phe Ile Ile Gln Tyr
 165 170 175
 Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Ala Gln Leu Ala Gln Leu
 180 185 190
 Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala Leu Gln Gln Lys Gln
 195 200 205
 Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala Gln Thr Leu Gln Gln
 210 215 220
 Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys Thr Leu Gln Leu Leu
 225 230 235 240

Arg	Lys	Gln	Gln	Thr	Ile	Ile	Leu	Asp	Asp	Glu	Leu	Ile	Gln	Trp	Lys	
				245					250					255		
Arg	Arg	Gln	Gln	Leu	Ala	Gly	Asn	Gly	Gly	Pro	Pro	Glu	Gly	Ser	Leu	
				260				265					270			
Asp	Val	Leu	Gln	Ser	Trp	Cys	Glu	Lys	Leu	Ala	Glu	Ile	Ile	Trp	Gln	
		275					280					285				
Asn	Arg	Gln	Gln	Ile	Arg	Arg	Ala	Glu	His	Leu	Cys	Gln	Gln	Leu	Pro	
	290					295					300					
Ile	Pro	Gly	Pro	Val	Glu	Glu	Met	Leu	Ala	Glu	Val	Asn	Ala	Thr	Ile	
305					310					315					320	
Thr	Asp	Ile	Ile	Ser	Ala	Leu	Val	Thr	Ser	Thr	Phe	Ile	Ile	Glu	Lys	
				325					330					335		
Gln	Pro	Pro	Gln	Val	Leu	Lys	Thr	Gln	Thr	Lys	Phe	Ala	Ala	Thr	Val	
			340					345					350			
Arg	Leu	Leu	Val	Gly	Gly	Lys	Leu	Asn	Val	His	Met	Asn	Pro	Pro	Gln	
		355					360					365				
Val	Lys	Ala	Thr	Ile	Ile	Ser	Glu	Gln	Gln	Ala	Lys	Ser	Leu	Leu	Lys	
	370					375					380					
Asn	Glu	Asn	Thr	Arg	Asn	Glu	Cys	Ser	Gly	Glu	Ile	Leu	Asn	Asn	Cys	
385					390					395					400	
Cys	Val	Met	Glu	Tyr	His	Gln	Ala	Thr	Gly	Thr	Leu	Ser	Ala	His	Phe	
				405					410					415		
Arg	Asn	Met	Ser	Leu	Lys	Arg	Ile	Lys	Arg	Ala	Asp	Arg	Arg	Gly	Ala	
			420					425					430			
Glu	Ser	Val	Thr	Glu	Glu	Lys	Phe	Thr	Val	Leu	Phe	Glu	Ser	Gln	Phe	
		435					440					445				
Ser	Val	Gly	Ser	Asn	Glu	Leu	Val	Phe	Gln	Val	Lys	Thr	Leu	Ser	Leu	
	450					455					460					
Pro	Val	Val	Val	Ile	Val	His	Gly	Ser	Gln	Asp	His	Asn	Ala	Thr	Ala	
465					470					475					480	
Thr	Val	Leu	Trp	Asp	Asn	Ala	Phe	Ala	Glu	Pro	Gly	Arg	Val	Pro	Phe	
			485						490					495		
Ala	Val	Pro	Asp	Lys	Val	Leu	Trp	Pro	Gln	Leu	Cys	Glu	Ala	Leu	Asn	
			500					505					510			
Met	Lys	Phe	Lys	Ala	Glu	Val	Gln	Ser	Asn	Arg	Gly	Leu	Thr	Lys	Glu	
		515					520					525				
Asn	Leu	Val	Phe	Leu	Ala	Gln	Lys	Leu	Phe	Asn	Asn	Ser	Ser	Ser	His	
	530					535					540					
Leu	Glu	Asp	Tyr	Ser	Gly	Leu	Ser	Val	Ser	Trp	Ser	Gln	Phe	Asn	Arg	
545					550					555					560	
Glu	Asn	Leu	Pro	Gly	Trp	Asn	Tyr	Thr	Phe	Trp	Gln	Trp	Phe	Asp	Gly	
				565					570					575		
Val	Met	Glu	Val	Leu	Lys	Lys	His	His	Lys	Pro	His	Trp	Asn	Asp	Gly	
			580					585					590			
Ala	Ile	Leu	Gly	Phe	Val	Asn	Lys	Gln	Gln	Ala	His	Asp	Leu	Leu	Ile	
		595					600					605				
Asn	Lys	Pro	Asp	Gly	Thr	Phe	Leu	Leu	Arg	Phe	Ser	Asp	Ser	Glu	Ile	
	610					615					620					
Gly	Gly	Ile	Thr	Ile	Ala	Trp	Lys	Phe	Asp	Ser	Pro	Glu	Arg	Asn	Leu	
625					630				635						640	
Trp	Asn	Leu	Lys	Pro	Phe	Thr	Thr	Arg	Asp	Phe	Ser	Ile	Arg	Ser	Leu	
				645					650					655		
Ala	Asp	Arg	Leu	Gly	Asp	Leu	Ser	Tyr	Leu	Ile	Tyr	Val	Phe	Pro	Asp	
			660					665					670			
Arg	Pro	Lys	Asp	Glu	Val	Phe	Ser	Lys	Tyr	Tyr	Thr	Pro	Val	Leu	Ala	
		675					680					685				
Lys	Ala	Val	Asp	Gly	Tyr	Val	Lys	Pro	Gln	Ile	Lys	Gln	Val	Val	Pro	
	690					695					700					
Glu	Phe	Val	Asn	Ala	Ser	Ala	Asp	Ala	Gly	Gly	Ser	Ser	Ala	Thr	Tyr	
705					710					715					720	
Met	Asp	Gln	Ala	Pro	Ser	Pro	Ala	Val	Cys	Pro	Gln	Ala	Pro	Tyr	Asn	
				725					730					735		
Met	Tyr	Pro	Gln	Asn	Pro	Asp	His	Val	Leu	Asp	Gln	Asp	Gly	Glu	Phe	
			740					745					750			

Asp Leu Asp Glu Thr Met Asp Val Ala Arg His Val Glu Glu Leu Leu
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 Arg Arg Pro Met Asp Ser Leu Asp Ser Arg Leu Ser Pro Pro Ala Gly
 770 775 780
 Leu Phe Thr Ser Ala Arg Gly Ser Leu Ser
 785 790

<210> 11
 <211> 787
 <212> PRT
 <213> Homo Sapiens

<400> 11
 Met Ala Val Trp Ile Gln Ala Gln Gln Leu Gln Gly Glu Ala Leu His
 1 5 10 15
 Gln Met Gln Ala Leu Tyr Gly Gln His Phe Pro Ile Glu Val Arg His
 20 25 30
 Tyr Leu Ser Gln Trp Ile Glu Ser Gln Ala Trp Asp Ser Val Asp Leu
 35 40 45
 Asp Asn Pro Gln Glu Asn Ile Lys Ala Thr Gln Leu Leu Glu Gly Leu
 50 55 60
 Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln Val Gly Glu Asp Gly
 65 70 75 80
 Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala Thr Gln Leu Gln Asn
 85 90 95
 Thr Tyr Asp Arg Cys Pro Met Glu Leu Val Arg Cys Ile Arg His Ile
 100 105 110
 Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala Asn Asn Gly Ser Ser
 115 120 125
 Pro Ala Gly Ser Leu Ala Asp Ala Met Ser Gln Lys His Leu Gln Ile
 130 135 140
 Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr Gln Asp Thr Glu Asn
 145 150 155 160
 Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr Phe Ile Ile Gln Tyr
 165 170 175
 Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Gly Pro Leu Ala Gln Leu
 180 185 190
 Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala Leu Gln Gln Lys Gln
 195 200 205
 Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala Gln Thr Leu Gln Gln
 210 215 220
 Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys Thr Leu Gln Leu Leu
 225 230 235 240
 Arg Lys Gln Gln Thr Ile Ile Leu Asp Asp Glu Leu Ile Gln Trp Lys
 245 250 255
 Arg Arg Gln Gln Leu Ala Gly Asn Gly Gly Pro Pro Glu Gly Ser Leu
 260 265 270
 Asp Val Leu Gln Ser Trp Cys Glu Lys Leu Ala Glu Ile Ile Trp Gln
 275 280 285
 Asn Arg Gln Gln Ile Arg Arg Ala Glu His Leu Cys Gln Gln Leu Pro
 290 295 300
 Ile Pro Gly Pro Val Glu Glu Met Leu Ala Glu Val Asn Ala Thr Ile
 305 310 315 320
 Thr Asp Ile Ile Ser Ala Leu Val Thr Ser Thr Phe Ile Ile Glu Lys
 325 330 335
 Gln Pro Pro Gln Val Leu Lys Thr Gln Thr Lys Phe Ala Ala Thr Val
 340 345 350
 Arg Leu Leu Val Gly Gly Lys Leu Asn Val His Met Asn Pro Pro Gln
 355 360 365
 Val Lys Ala Thr Ile Ile Ser Glu Gln Gln Ala Lys Ser Leu Leu Lys
 370 375 380
 Asn Glu Asn Thr Arg Asn Asp Tyr Ser Gly Glu Ile Leu Asn Asn Cys
 385 390 395 400
 Cys Val Met Glu Tyr His Gln Ala Thr Gly Thr Leu Ser Ala His Phe

Arg	Asn	Met	Ser	Leu	Lys	Arg	Ile	Lys	Arg	Ser	Asp	Arg	Arg	Gly	Ala
			420					425					430		
Glu	Ser	Val	Thr	Glu	Glu	Lys	Phe	Thr	Ile	Leu	Phe	Glu	Ser	Gln	Phe
		435					440					445			
Ser	Val	Gly	Gly	Asn	Glu	Leu	Val	Phe	Gln	Val	Lys	Thr	Leu	Ser	Leu
	450					455					460				
Pro	Val	Val	Val	Ile	Val	His	Gly	Ser	Gln	Asp	Asn	Asn	Ala	Thr	Ala
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Thr	Val	Leu	Trp	Asp	Asn	Ala	Phe	Ala	Glu	Pro	Gly	Arg	Val	Pro	Phe
				485					490					495	
Ala	Val	Pro	Asp	Lys	Val	Leu	Trp	Pro	Gln	Leu	Cys	Glu	Ala	Leu	Asn
			500					505					510		
Met	Lys	Phe	Lys	Ala	Glu	Val	Gln	Ser	Asn	Arg	Gly	Leu	Thr	Lys	Glu
		515					520					525			
Asn	Leu	Val	Phe	Leu	Ala	Gln	Lys	Leu	Phe	Asn	Asn	Ser	Ser	Ser	His
	530					535					540				
Leu	Glu	Asp	Tyr	Ser	Gly	Leu	Ser	Val	Ser	Trp	Ser	Gln	Phe	Asn	Arg
545					550					555					560
Glu	Asn	Leu	Pro	Gly	Arg	Asn	Tyr	Thr	Phe	Trp	Gln	Trp	Phe	Asp	Gly
				565					570					575	
Val	Met	Glu	Val	Leu	Lys	Lys	His	Leu	Lys	Pro	His	Trp	Asn	Asp	Gly
			580					585					590		
Ala	Ile	Leu	Gly	Phe	Val	Asn	Lys	Gln	Gln	Ala	His	Asp	Leu	Leu	Ile
		595					600					605			
Asn	Lys	Pro	Asp	Gly	Thr	Phe	Leu	Leu	Arg	Phe	Ser	Asp	Ser	Glu	Ile
	610					615					620				
Gly	Gly	Ile	Thr	Ile	Ala	Trp	Lys	Phe	Asp	Ser	Gln	Glu	Arg	Met	Phe
625					630					635					640
Trp	Asn	Leu	Met	Pro	Phe	Thr	Thr	Arg	Asp	Phe	Ser	Ile	Arg	Ser	Leu
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Ala	Asp	Arg	Leu	Gly	Asp	Leu	Asn	Tyr	Leu	Ile	Tyr	Val	Phe	Pro	Asp
			660					665					670		
Arg	Pro	Lys	Asp	Glu	Val	Tyr	Ser	Lys	Tyr	Tyr	Thr	Pro	Val	Pro	Cys
		675					680						685		
Glu	Ser	Ala	Thr	Ala	Lys	Ala	Val	Asp	Gly	Tyr	Val	Lys	Pro	Gln	Ile
	690					695					700				
Lys	Gln	Val	Val	Pro	Glu	Phe	Val	Asn	Ala	Ser	Ala	Asp	Ala	Gly	Gly
705					710					715					720
Gly	Ser	Ala	Thr	Tyr	Met	Asp	Gln	Ala	Pro	Ser	Pro	Ala	Val	Cys	Pro
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Gln	Ala	His	Tyr	Asn	Met	Tyr	Pro	Gln	Asn	Pro	Asp	Ser	Val	Leu	Asp
		740						745					750		
Thr	Asp	Gly	Asp	Phe	Asp	Leu	Glu	Asp	Thr	Met	Asp	Val	Ala	Arg	Arg
	755						760					765			
Val	Glu	Glu	Leu	Leu	Gly	Arg	Pro	Met	Asp	Ser	Gln	Trp	Ile	Pro	His
	770					775					780				
Ala	Gln	Ser													
785															